

CLAIMS

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1. A bacterium attenuated by a non-reverting mutation in each of the *aroC* gene, the *ompF* gene and the *ompC* gene.
2. A bacterium according to claim 1 which infects by the oral route
- 10 3. A bacterium according to claim 1 which is from the genera *Escherichia*, *Salmonella*, *Vibrio*, *Haemophilus*, *Neisseria*, *Yersinia*, *Bordetella* or *Brucella*.
- 15 4. A bacterium according to claim 3 which is a strain of *Escherichia coli*, *Salmonella typhimurium*, *Salmonella typhi*, *Salmonella enteritidis*, *Salmonella choleraesuis*, *Salmonella dublin*, *Haemophilus influenzae*, *Neisseria gonorrhoeae*, *Yersinia enterocolitica*, *Bordetella pertussis* or *Brucella abortus*.
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5. A bacterium according to claim 4 which is a strain of enterotoxigenic *E.coli* (ETEC).
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6. A bacterium according to ^{claim 1} ~~any one of the preceding claims~~ which is further attenuated by a mutation in a fourth gene.

7. A bacterium according to claim 6 wherein the fourth gene is *aroA*, *aroD*, *aroE*, *pur*, *htrA*, *galE*, *cya*, *crp*, *phoP* or *surA*.
- 5 8. A bacterium according to ^{claim 1} ~~any one of the preceding claims~~, wherein the mutation in each gene is a defined mutation.
- 10 9. A bacterium according to ^{claim 1} ~~any one of the preceding claims~~, wherein the mutation in each gene is deletion of the entire coding sequence.
- 15 10. A bacterium according to ^{claim 1} ~~any one of the preceding claims~~ which has been genetically engineered to express a heterologous antigen.
- 20 11. A bacterium according to claim 10, wherein expression of the antigen is driven by the *nirB* promoter or the *htrA* promoter.
- 25 12. A vaccine comprising a bacterium as defined in ^{claim 1} ~~any one of the preceding claims~~ and a pharmaceutically acceptable carrier or diluent.
- 30 13. A bacterium as defined in ^{claim 1} ~~any one of claims 1 to 11~~ for use in a method of vaccinating a human or animal.
14. An enterotoxigenic *E.coli* cell attenuated by a non-reverting mutation in each of the *aroC* gene, the

ompF gene and the *ompC* gene, for use in a method of vaccinating a human or animal against diarrhoea.

- 5 15. Use of a bacterium as defined in ^{claim 1} ~~any one of claims 1 to 11~~ for the manufacture of a medicament for vaccinating a human or animal.
- 10 16. A method of raising an immune response in a mammalian host, which comprises administering to the host a bacterium attenuated by a non-reverting mutation in each of the *aroC* gene, the *ompF* gene and the *ompC* gene.

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